

World's First 16" SWRO Membrane Desalination Plant - Monitored & Controlled Entirely by a Yokogawa STARDOM and FAST/TOOLS SCADA System

YTL PowerSeraya Pte. Limited

Location: Pulau Seraya Power Station, Singapore
Order date: May 2006
Completion: September 2007
Industry: Utilities, Desalination



Executive Summary

YTL PowerSeraya Pte. Limited. is in the business of producing, wholesaling, trading, and retailing of energy, with a primary focus on electricity. With its strategic location on Jurong Island and excellent infrastructure, the Company has built an integrated energy business which includes the sale of steam and water as well as oil trading and storage.

YTL PowerSeraya's desalination plant converts seawater into potable drinking water and service water for its existing boiler plants and utilities operations. It can produce 10,000 m3 of water per day. All operations at this plant are monitored and controlled by an integrated STARDOM and FAST/TOOLS SCADA system. Installed on a very tight schedule by Yokogawa Engineering Asia, this system has been in operation since September 2007 and has experienced no major system problems. The high reliability of this SCADA system is managed by the O&M staff of YTL PowerSeraya.



SWRO membrane process



Main control room for field operations

The Challenges and the Solutions

The first challenge in the YTL PowerSeraya desalination project was a very tight schedule. Working flawlessly from start to finish of this project, Yokogawa Engineering Asia was more than up to this challenge. A key advantage was that the company is a one stop provider not only of STARDOM controllers and the FAST/TOOLS human machine interface (HMI), but also various kind of field instruments.

Yokogawa also provided comprehensive engineering services, from the formulation of control strategy to the installation and commissioning of the integrated system. Approximately 1,400 I/O points were wired in/out at the STARDOM controller panels in the desalination plant's main control room. With this integrated system, all the real time process data can now also be monitored from the administration and turbine buildings via a dual redundant fiber optic cable network.

YTL PowerSeraya needs a constant supply of water for its boiler plants, ensuring the steady generation of power around the clock, 365 days a year. The quality of this service water is tightly monitored and controlled by Yokogawa conductivity and pH meters. Accurate measurements of the conductivity and pH readings in the salt water reverse osmosis (SWRO) membranes are important for the quick detection of any seawater leakage. This contributes to a longer SWRO membrane life and reduces TCO.

At this plant, Yokogawa magnetic flowmeters also help to keep costs down by accurately measuring the consumption of many different types of chemicals.



Conductivity/pH meters



Magnetic flowmeter



Magnetic flowmeter converter

Customer Satisfaction

Abdul Rahim Sapuan, Team Leader of the Multi Utilities-Gen Dept. said, "We are very happy with Yokogawa's proven SCADA system which helps to produce a constant supply of water to our boiler plants. The reliability of Yokogawa's system and products is excellent. We can produce the water and constantly supply it to the boiler plants."

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